

Proposal # 2001- _____ (Office Use Only)

PSP Cover Sheet

Proposal Title: Use of the Delta for rearing by Central Valley chinook salmon
 Applicant Name: California Department of Fish and Game
 Contact Name: Bill Snider (DFG)
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Amount of funding requested: \$518,777

Some entities charge different costs dependent on the source of the funds. If it is different for state or federal funds list below.

State cost _____ Federal cost _____

Cost share partners? X Yes No

California Department of Fish and Game \$150,000

Indicate the Topic for which you are applying (check only one box).

- | | |
|--------------------------------------|--|
| Natural Flow Regimes | Beyond the Riparian Corridor |
| Nonnative Invasive Species | Local Watershed Stewardship |
| Channel Dynamics/ Sediment Transport | Environmental Education |
| Flood Management | Special Status Species Survey s and Studies |
| Shallow Water Tidal/ Marsh Habitat | X Fishery Monitoring, Assessment and Research |
| Contaminants | Fish Screens |

What county or counties is the project located in? Butte, Colusa, Contra Costa, Merced, Nevada, Placer, Sacramento, San Joaquin, Shasta, Stanislaus, Sutter, Tehama, Yolo and Yuba.

What CALFED ecozone is the project located in? See attached list and indicate number.

Be as specific as possible: 1.1, 1.2, 1.3, 1.4, 2.1, 2.5, 3.1, 3.4, 3.5, 4.1, 4.4, 5.1, 5.2, 6.1, 7.2, 7.3, 7.4, 7.5, 7.6, 8.1, 8.2, 8.4, 9.1, 9.2, 10.2, 11.1, 11.2, 12.1, 13.1, 132, 13.3.

Indicate the type of applicant (check only one box):

- | | |
|---------------------------------|----------------|
| X State agency | Federal agency |
| Public/Non-profit joint venture | Non-profit |
| Local government /district | Tribes |
| University | Private party |
| Other: _____ | |

Indicate the primary species which the proposal addresses (check all that apply):

- | | |
|---|---------------------------|
| San Joaquin and East-side Delta tributaries | Spring-run chinook salmon |
| Winter-run chinook salmon | Fall-run chinook salmon |
| Late-fall run chinook salmon | Longfin smelt |
| Delta smelt | Steelhead trout |
| Splittail | |

Green sturgeon

White Sturgeon _

Waterfowl and Shorebirds

Migratory birds

Other listed T/E species: _____

Striped bass

☒ All chinook species

All anadromous salmonids

American shad

Indicate the type of project (check only one box):

☒ Research/Monitoring

Pilot /Demo Project

Full-scale Implementation

Watershed Planning

Education

Is this a next-phase of an ongoing project? Yes _____ No ☒

Have you received funding from C ALFED before? Yes _____ No ☒

If yes, list project title and CALFED number _____

Have you received funding from CVPIA before? Yes ☒ No _____

If yes, list CVPI A program providing funding, project title and CVPI A number (if applicable):

Instream Flow Study FWS # 1448-0001-95618

By signing below, the applicant declares the following:

- The truthfulness of all representations in their proposal;
- The individual signing the form is entitled to submit the application on behalf of the applicant (if the applicant is an entity or organization); and
- The person submitting the application has read and understood the conflict of interest and confidentiality discussion in the PSP (Section 2.4) and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent as provided in the Section.

William M. Snider

Printed name of applicant

WM Snider

Signature of applicant

B. EXECUTIVE SUMMARY

Project Title: Use of the Delta for Rearing by Central Valley Chinook Salmon
Amount: \$165,000 annually for 3.5 years, totaling \$518,777
Applicants: Mr. Bill Snider, Program Manager: voice (916) 227-6336, FAX (916) 227-6399, bsnider@dfg2.ca.gov
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Participants & Collaborators: California Department of Fish and Game, California Department of Water Resources, S. P. Cramer & Associates, East Bay Municipal Utility District, Interagency Ecological Program for the San Francisco Bay/Delta Estuary, U. S. Fish and Wildlife Service.

Summary: This proposal will address one of the major areas of scientific uncertainty stated in section 3.3 of the 2001 Proposal Solicitation Package (PSP), *The Importance of the Delta to Salmon* (p. 28). Research will target the role of the Sacramento-San Joaquin Delta (Delta) in chinook salmon life history to address the scientific uncertainties, including:

- Do substantial numbers of salmon fry successfully rear in the Delta?
- What fraction of each salmon race rear in the Delta?
- What is the contribution of the primary salmon producing tributaries to Delta fry rearing?
- What is the relative survival of salmon fry that rear in the Delta versus the survival of fry that rear in tributaries?
- What is the relationship between Delta fry rearing and natal stream habitat conditions and life history strategies?
- What is the differential survival between salmon juveniles that rear in the Delta versus salmon juveniles that primarily use the Delta as a migration corridor?

The lack of scientifically derived answers to these questions is the problem facing successful achievement of the ERP strategic goal to increase the population of at-risk native species, specifically all runs of chinook salmon (PSP, p. 17). The objectives of the research are to identify the various ways salmon use the Delta, the relationship between use of the Delta and environmental conditions in the Delta and upstream in the natal stream and the relative success of salmon compared to how they use the Delta under varying, ambient conditions. The research approach will be to use otolith microstructure analysis to determine the life history of salmon adults, focusing on the early, freshwater period life history strategy, specifically how "successful" adults used the Delta. Our working hypothesis is that there is a direct relationship between salmon survival and use of the Delta and that use is variable dependent upon life history (size and timing of Delta entry) and ambient (upstream and Delta conditions). The results of this research should reduce uncertainty surrounding the importance of the Delta to fry rearing, to differential life histories expressed by the different races of chinook salmon in the Central Valley and how the importance of the Delta varies relative to macro habitat conditions and life history strategies.

C. PROJECT DESCRIPTION

1. STATEMENT OF THE PROBLEM

a. Problem – This proposal will address one of the major areas of scientific uncertainty stated in section 3.3 of the 2001 Proposal Solicitation Package (PSP), *The Importance of the Delta to Salmon* (p. 28). We propose to conduct research that will develop much needed information on the life history of chinook salmon in the Central Valley. The research will target the role of the Sacramento-San Joaquin Delta (Delta) in chinook salmon life history to address the scientific uncertainties identified in the PSP regarding the importance of the Delta for salmon. Questions posed in the PSP will be addressed, including:

- Do substantial numbers of salmon fry successfully rear in the Delta?
- What fraction of each salmon race rear in the Delta?
- What is the contribution of the primary salmon producing tributaries to Delta fry rearing?
- What is the relative survival of salmon fry that rear in the Delta versus the survival of fry that rear in tributaries?
- What is the relationship between Delta fry rearing and natal stream habitat conditions and life history strategies?
- What is the differential survival between salmon juveniles that rear in the Delta versus salmon juveniles that primarily use the Delta as a migration corridor?

Implicit in these questions are the relationships between salmon survival to adulthood and juvenile behavior, including timing of emigration, size at emigration, life history, upstream conditions (natal stream, migratory route, flood plain) size of the emigrating population and Delta conditions (e.g, flow regime, management actions).

The lack of scientifically derived answers to these questions is the problem facing successful achievement of the ERP strategic goal to increase the population of at-risk native species, specifically all runs of chinook salmon (PSP, p. 17). Reducing the scientific uncertainty surrounding the importance of the Delta for salmon would add information on this species' response to ecosystem functions and allow linkage between this goal and long-term, large-scale restoration actions directed toward long-term recovery.

Most work to date in the Delta has primarily focused on monitoring the timing and relative abundance of salmon entering and exiting the Delta, and restricted presence/absence monitoring within the Delta (e.g. USFWS 1997). Most research on the influences of Delta management actions on salmon has centered around the use of experimental releases of smolt-sized, hatchery-reared salmon (USFWS 1997 and references therein; USFWS, Stockton, CA, unpubl. data) to determine differential survival as a function of successful migration through the Delta. The preponderance of information on chinook salmon emigration in the Central Valley, however, shows that the vast majority of salmon leave their natal stream and emigrate to the Delta as fry (Rutter 1903, Hatton 1940, Hatton and Clark 1942, Schaffter 1980, Snider and Titus 1998, CDWR 1999, Hill and Webber 1999, Workman 1999, Snider and Titus 2000) requiring suitable rearing conditions farther downstream in the system, most notably in the Delta, to complete the parr-to-smolt transformation (Folmar and Dickhoff 1980, Wedemeyer et al. 1980) in preparation for entry to the ocean. This information has led to what the PSP refers to as varying "scientific opinion" on the importance of the Delta to the survival of chinook salmon.

The issue of juvenile salmonid survival during the freshwater phase is complex. Research on the role of the Delta must be placed in context of the entire system. Measurement of differential survival of salmon as a function of size at Delta entry, timing, natal stream conditions, Delta conditions, life history, race, and the magnitude of the juvenile population could reduce uncertainty as to the role of the Delta. We propose to address these relationships by conducting an objective, comprehensive, systematic evaluation on the role of the Delta in the life history of Central Valley salmon.

The objectives of our research addresses many of the basic questions surrounding the utility of the Delta as well as the overall question of life history strategies relative to ultimate survival as an ecosystem function. These objectives are:

- To measure the proportion of successful (adult) salmon that use the Delta for juvenile rearing versus those that use the upstream environs (e.g., natal stream, flood plain) for rearing as a function of overall macro-conditions (e.g., flow regime).
- To measure the proportion of successful salmon that use the Delta for rearing as a function of natal stream and race.
- To measure the proportion of salmon that use the Delta for rearing as a function of natal stream conditions.
- To determine the proportion of salmon that use the Delta only for migration as a function of race, natal stream, life history strategy.
- To measure the fraction of successful salmon that migrate to the Delta as fry.

By pursuing these objectives over a period of at least three years, further information on the function of the Delta as part of the chinook salmon ecosystem will be obtained, including the relationship between successful Delta fry rearing and macro-conditions (e.g., flow, Delta export activities) in the Delta. Most dialogue on how to manage the Delta to accommodate salmon needs focuses on migration needs of smolt-sized fish. Criteria used to signal modifications in Delta management presently exclude the occurrence of fry as indicators of specific management needs. Overall, the goal of the proposed research is to reduce the uncertainty about how juvenile chinook salmon use the Delta relative to their survival to adulthood.

b. Conceptual Model – Understanding the role of the Delta in the salmon ecosystem requires an examination of the different possible outcomes associated with variable size, life stage, and time at emigration from the natal stream. Percy (1992) described the mechanistic relationship between survival and emigration timing noting that it must occur when food availability and other environmental conditions downstream are compatible with the needs of the emigrant. Early emigration by small, recently-emerged salmon requires suitable growing and other habitat conditions in the downstream environs if they are to grow to a size and life stage to accommodate successful ocean entry and ultimate survival to adulthood. Fish that reside in the natal stream for increasing periods require correspondingly less residence time in the estuary to achieve the optimum size and life stage for ocean entry.

However, even the largest emigrating fall-run chinook salmon use the estuary and continue to grow there before entering the ocean (Cannon 1982, Unwin and Lucas 1993). The additional growth likely contributes to a higher survival probability. Conditions required to optimize cohort survival therefore include natal stream conditions that optimize the number and

size of emigrants remaining beyond emergence, and optimal estuarine conditions throughout the downstream migration period. Typically, however, optimal habitat conditions do not always occur throughout the salmon ecosystem. Timing of emigration becomes exceedingly more critical as the period and extent of suitable habitat availability decreases.

Salmon that remain in the natal stream well beyond emergence reduce risks associated with dependence upon availability of prolonged, suitable conditions downstream. Emigrating at an increasingly larger size may increase the potential for successful smolting and likely increases the ability to withstand unfavorable conditions downstream, such as predation, supra-optimal temperatures, etc. Later emigration also corresponds to the historical peak in spring runoff that accommodated movement through the system when available flow and temperature conditions were generally favorable and when downstream environs were likely conducive to growth and survival.

Tools for revealing the growth and life history of juvenile chinook salmon include analysis of microstructures in scales and otoliths (ear stones). Chinook salmon otoliths have been used elsewhere to discriminate stocks (e.g. Zhang et al. 1995) and to estimate growth rates (Bradford and Geen 1987), including juvenile estuarine growth rates (Neilson et al. 1985). The basic premise of otolith microstructure analysis is that growth increments (rings) in otoliths provide a detailed chronology of the growth history of young fish, much like growth rings in a tree but on a finer time scale (i.e., days in otoliths v. years in tree rings). The primary determinants of both otolith and fish growth are temperature and food. Consequently, we expect to see variation in otolith growth rates corresponding to rearing periods in different spatial or temporal zones within the ecosystem where temperature and food vary. Thus, otolith growth rates will segregate if fish experience gross differences in temperature and food availability while rearing in different parts of the system (natal headwater through the Delta/Bay). Further, when validated for daily ring formation (e.g. Castleberry et al. 1994), otoliths can be used as a chronometer to measure the number of days an individual salmon has spent in different parts of the system during its early life history. Characterization of juvenile salmon from given cohorts, combined with identification as returning adults, will ultimately establish a means for evaluating the success of individual life histories (e.g. riverine vs. Delta rearing) on a cohort-by-cohort basis relative to ambient environmental conditions in the system.

The concept for linking analysis of otoliths to salmon rearing and migration patterns, and survival to adulthood, is simple. Juvenile salmon will be sampled successively in time and space as they proceed through the system to validate a change in both qualitative and quantitative otolith microstructure attributes against associated changes in habitat conditions (e.g. from natal tributary to mainstem river to delta, etc.). Samples from tributary streams in the system will serve as a reference collection of otoliths for fish originating from each stream. The collections will provide snapshot views of both fish and otolith development at each location, stratified temporally over the emigration season, with which to delineate subsequent growth and development in progressively more-downstream environs. Ultimately, these reference collections will be used to identify how returning adults used the system (typically) two to four years earlier.

- c. Hypotheses Being Tested** – The proposed work will test the following paired null hypotheses:
- H_{0a} : Salmon that survive to adulthood do not use the Delta for rearing.
 - H_{0b} : Salmon that survive to adulthood do not use their natal tributary for rearing.

d. Adaptive Management – As stated in the PSP (p. 28), the role of the Delta in the Central Valley chinook salmon ecosystem is an area of varying professional opinion and high scientific uncertainty. Because of the apparent high level of uncertainty, this proposal is soliciting support for a research project to significantly reduce that uncertainty.

Relative to Figure 2 of the PSP, the **problem** is detailed in section C.1.a. of this proposal. Corresponding **ecosystem goals** for Central Valley salmon are stated in section 3.2 of the PSP (Goal 1 - At-Risk Species). A **conceptual model** is presented in section C.1.b. of this proposal which examines the possible outcomes of variable salmon emigration, the role of the Delta relative to that variability, and a study plan for pursuing objectives to reduce scientific uncertainty about the importance of the Delta for salmon. The proposed work in section C.2. of this proposal represents the **initiation of a restoration action** whereby targeted research is undertaken to provide necessary knowledge with which to ultimately design and implement ecosystem restoration in the Delta that would have a high probability of contributing significantly to the recovery of Central Valley chinook salmon.

Currently, scientific uncertainty about the role of the Delta in the Central Valley salmon ecosystem is too great to responsibly allow the initiation of a pilot or other implementation project. If Delta rearing by salmon fry is found to be a key element in the fish's life history, the next step will be to determine exactly which habitat attributes of the Delta provide suitable rearing conditions for young salmon, which of those may be limiting to production, and how a limiting condition may be enhanced through restoration to contribute toward species recovery.

The design of the proposed research will change, as necessary, in two primary respects. First, the sampling design will be responsive to specific information needs, which may, for example, include not only (increasing or decreasing) sampling intensity within a location, but also geographic coverage as opportunities arise to sample new populations or as data gaps are discovered. Second, development of the research will also be responsive to an on-going evaluation of the efficacy of otolith microstructure analysis to: (i) allow stock identification; (ii) provide a chronology of salmon rearing in different spatial and temporal growth zones in the ecosystem including the Delta; and (iii) relate the success of individual life histories to associated freshwater and estuarine rearing conditions.

e. Educational Objectives – There are no direct educational objectives for this proposal.

2. PROPOSED SCOPE OF WORK

a. Location and/or Geographic Boundaries of the Project – This project will occur throughout the Central Valley system. Sampling of juvenile and adult salmonids will occur in streams, the Delta, and upper Suisun Bay in the following counties: Butte, Colusa, Contra Costa, Merced, Nevada, Placer, Sacramento, San Joaquin, Shasta, Stanislaus, Sutter, Tehama, Yolo, and Yuba. Ecological management zones included are: Sacramento-San Joaquin Delta (1.1, 1.2, 1.3, 1.4); Suisun Marsh/North San Francisco Bay (2.1, 2.5); Sacramento River (3.1, 3.4, 3.5); North Sacramento Valley (4.1, 4.4); Cottonwood Creek (5.1, 5.2); Colusa Basin (6.1); Butte Basin (7.2, 7.3, 7.4, 7.5, 7.6); Feather River and Sutter Basin (8.1, 8.2, 8.4); American River Basin (9.1, 9.2); Yolo Basin (10.2); Eastside Delta Tributaries (11.1, 11.2); San Joaquin River (12.1); and East San Joaquin (13.1, 13.2, 13.3).

b. Approach – Juveniles: The basic study approach will be to sample juvenile salmon successively in time and space as they proceed through the system to validate changes in both qualitative and quantitative otolith microstructure attributes against associated changes in spatial and temporal zones (e.g. from natal tributary to mainstem river to delta to bay, or any given habitat over time). Sampling will be coordinated with existing juvenile emigration monitoring activities throughout the system, including the upper Sacramento River, Clear Creek, Battle Creek, Mill Creek, Deer Creek, Sacramento River at the Glenn-Colusa Irrigation District diversion facility, Butte Creek, Sacramento River at Tisdale Weir and at Knights Landing, Feather River, Yuba River, Dry Creek (Placer Co.), lower American River, Sacramento River at Sacramento, Cosumnes River, Mokelumne River, Tuolumne River, Stanislaus River, Merced River, San Joaquin River at Mossdale, interior Delta points including the State and Federal pumping facilities, Chipps Island, and in San Francisco Bay. Sampling will also occur at Coleman, Feather River, Nimbus, and Mokelumne River fish hatcheries and at the Merced River Fish Facility.

Samples taken yearly from tributaries in the system will serve as an annual reference collection of otoliths for fish originating from each stream. The collections will provide snapshot views of both fish and otolith development at each location, stratified temporally over the emigration season, with which to delineate subsequent growth and development in progressively more-downstream environs. Collections made at tributary sites will also allow for analysis to describe otolith microstructure variation within and among stocks, and to investigate its utility as a stock identification tool. Coded-wire-tagged salmon will be sampled before release from the hatcheries. Tagged salmon will provide a source of fish of known origin whose otolith development can be tracked as the fish move through the system.

Juvenile salmon samples will be taken in existing monitoring activities per a protocol designed specifically for each sampling activity (see attached example). Two basic protocol formats will be used: in tributary streams, 150 salmon of each race will be collected, as permits allow, stratified by fish size and time to represent the early, middle, and late phases of the emigration. In Sacramento and San Joaquin river and delta sampling points where fish are of various origins and races, typically 30 salmon will be collected every other week, as available and as allowed in permits. These samples will also be stratified by fish size.

Written protocols and all necessary collection materials will be provided to entities making juvenile collections. In all cases, fish ≤ 50 mm FL will be preserved in 96% ethanol, while those > 50 mm FL will be frozen. The date, location, species, race, method of collection, collection no. (corresponding to a collection log), and the number of fish in the sample will be recorded on a data slip for each sample. The slip will be inserted into the sample jar or whirl pack. Samples will then be retained for periodic pick-up by the CDFG Stream Evaluation Program.

In the laboratory, the fork length (FL) of fish < 100 mm FL will be measured to the nearest 0.1 mm with a caliper while those > 100 mm FL will be measured with a rule to the nearest 1 mm. Fish < 50 mm FL will be blotted dry and weighed to the nearest 0.1 mg. The sagittal otoliths will be dissected and archived in tissue culture trays. Each sample will be given a unique alphanumeric code that includes the sample location, sampling date, species, archive box, and archive box well number. A scale sample will be taken from at least a sub-sample of fish from each collection, stored in a coin envelope, and cross-referenced with the corresponding otoliths with the same code.

At least some species of Pacific salmon, including sockeye (West and Larkin 1987) and chinook (Zhang et al. 1995), consistently form a check mark in their otoliths when they make the transition from reliance on the yolk sac as the primary source of nutrition to external feeding. The first-feeding check will serve as an important benchmark with which to characterize the microstructure patterns in salmon. In our work, fish bracketing the emergence stage – that is, those ranging in development from still having some of their yolk sac present to those recently “buttoned-up” – will undergo further analysis to establish the formation of the first-feeding check in the otolith. To do this, the gut of the fish will be checked for the presence or absence of food items to determine if the fish has begun exogenous feeding. Any remaining yolk mass will be dissected from the fish body, the yolk and body will be placed in a clean glass vial, air dried for at least 72 h, and then the dried yolk and body will be weighed to the nearest 0.1 mg. The proportion of yolk dry weight to total (yolk + body) dry weight of the fish will be calculated (Marr 1966) to mathematically describe the embryonic development of the fish relative to its otolith development.

The left sagittal otolith from each salmon will be prepared for microscopic analysis. The left otolith will be selected simply to apply a consistent convention, although the right otolith will be used instead when the left one is vateritic, broken, or otherwise not useable. The otolith will be mounted on a standard microscope slide with thermoplastic resin with the sulcal surface of the otolith facing upward. The otolith will be wet grinded to the primordial plane with fine carborundum paper (1200 grain) and polished with aluminum micropolish to enhance the visibility of microstructures. The otolith will then be turned over and ground and polished similarly on the other side to finalize the preparation for viewing.

The otolith will be viewed with a light microscope and its image digitized with an image analysis system, using either *Bony Parts* or *Image-Pro Plus* imaging software. All measurements will be made within the dorso-posterior quadrant of the otolith. Benchmarks in the otolith will be identified such as the hatching check, first-feeding check, and changes in microstructural patterns associated with changes in ambient conditions (e.g. temperature, food availability, salinity) that the fish experiences as it moves downstream through the system (Figure 1). These benchmarks will be both qualitatively evaluated, i.e. through visual interpretation, and measured. Measurements will consist of radial distances from the otolith primordium to the given check mark, and of otolith increment (ring) widths in detectable growth zones observed past the first-feeding check. The number of daily rings will be counted in observed zones of the otolith corresponding to rearing by the fish in each growth zone. The radial distance to the edge of the otolith will be measured as an index of total otolith size. If applicable, a backcalculation model being developed by the CDFG to estimate growth rates of individual juvenile salmon in a separate effort (R. G. Titus and W. M. Snider, CDFG, in prep.) may ultimately be used to estimate growth rates in different growth zones.

The various measurements described above will provide the basic data array for analysis. Descriptive statistics (e.g. mean, SD, cv, etc.) will be used to provide a basic description of the tributary reference collections. For fall-run salmon, sample sizes requested from monitoring activities are designed to allow comparisons of data between groups (e.g. location, emigration time, etc.) using standard parametric models, such as analysis of variance (ANOVA), multifactor ANOVA or other multivariate statistical techniques. It is anticipated the data on measurements of various otolith dimensions will meet assumptions of normality and equality of variances to apply analysis of variance models. Concerns of orthogonality in multiple comparisons will be

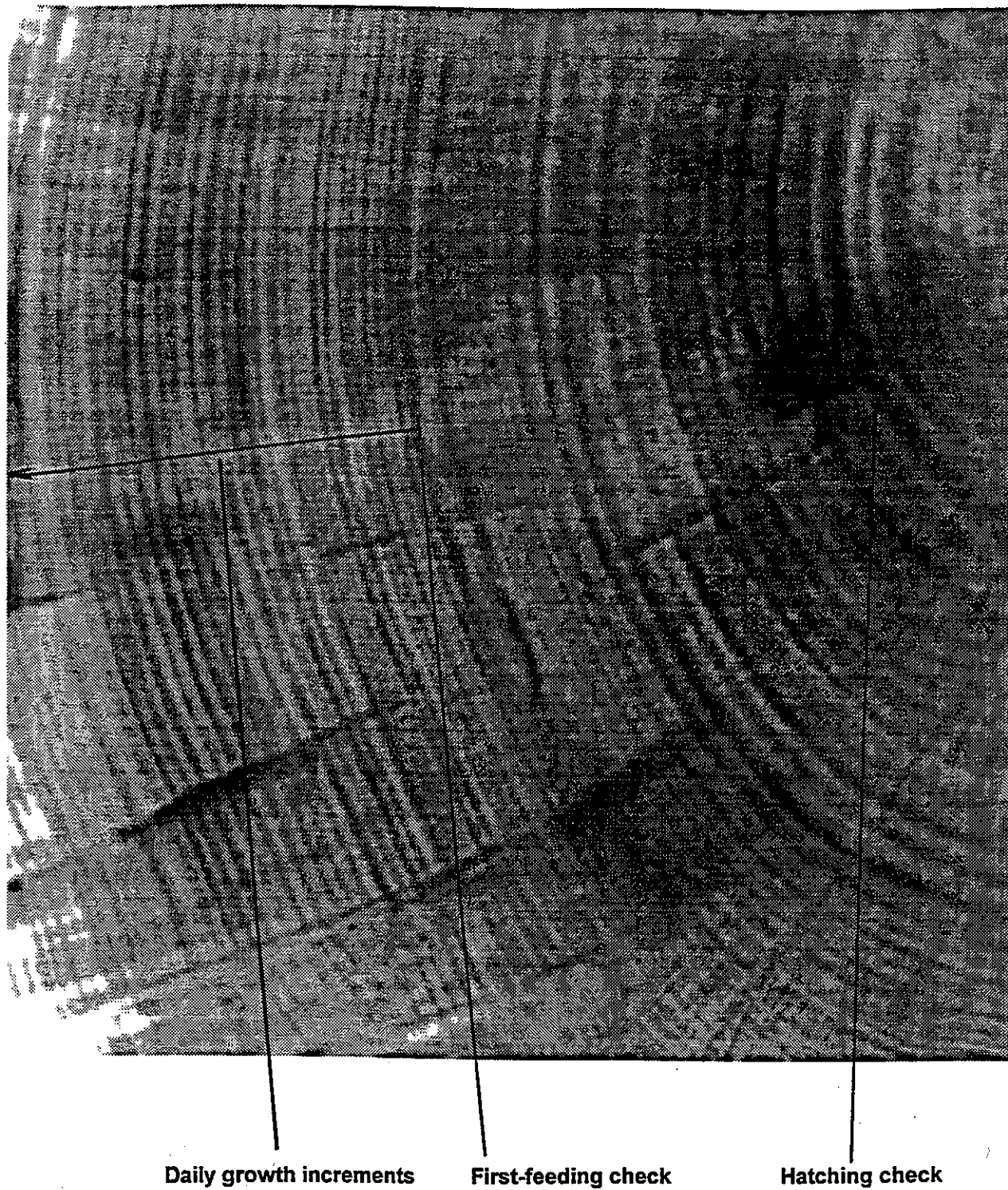


Figure 1. Image of sagittal otolith from juvenile chinook salmon, 78 mm FL, captured in the lower American River on June 1, 1998. Shown are the hatching check, first-feeding check, and daily growth increments. 32.8X magnification.

addressed through *a priori* application of the H_0 that there is no significant difference in otolith microstructural patterns of different groups of fish at different times. Affinities among groups may be explored through application of cluster analysis.

Adults: The basic study approach with regard to adults will be to interrogate their otoliths relative to the reference collections of juveniles corresponding to their brood year cohort (typically 2–4 years earlier) to determine how the fish used the ecosystem as a juvenile. Specifically, adult otolith microstructure patterns will be measured and compared against reference signatures to infer if the fish reared in its natal stream as a fry, or emigrated to the Delta to rear there as a fry.

Otoliths from adults will be collected from throughout the system in dedicated sampling efforts and in coordination with existing spawner escapement (carcass) surveys conducted by the CDFG and USFWS, the CDFG Tissue Archiving Project and any other tissue collection activities being conducted for genetics studies, and the CDFG's Central Valley Harvest Monitoring Project. Sampling of natural populations will occur on the upper Sacramento River, Clear Creek, Cottonwood Creek, Battle Creek, Antelope Creek, Mill Creek, Deer Creek, Big Chico Creek, Butte Creek, Feather River, Yuba River, Dry Creek (Placer Co.), lower American River, Cosumnes River, Mokelumne River, Tuolumne River, Stanislaus River, and Merced River. Concurrent collections will also be made at Coleman, Feather River, Nimbus, and Mokelumne River fish hatcheries, and at Merced River Fish Facility.

The basic protocol will be to collect 150 samples from each adult spawner population, stratified by: (i) time, over the duration of the spawning period; (ii) space, over the longitudinal axis of the spawning area; and (iii) fish size, age, and sex. The target will be to take 50 samples during each of the early, middle, and late phases of the spawning run.

Written protocols and all necessary collection materials will be provided to samplers making adult otolith collections. Otoliths will be dissected on-site from adult salmon carcasses. The otoliths will be stored in pre-labeled microcentrifuge tubes which will then be stored in cryogenic freezer boxes. Corresponding scale samples will be taken and stored in coin envelopes. Associated data will be recorded on sample date and location, method of collection, fish fork length, sex, spawning degree (spent or not), and carcass condition (fresh or decayed). Otolith/scale samples will be numbered by location and date and cross-referenced with tissue collection codes and coded-wire-tag return codes, as appropriate.

The left otolith of adults will be prepared using essentially the same method as for juveniles (see above), the exception being that adult otoliths will first be reduced through decalcification in EDTA per a modified method of Zhang *et al.* (1995) (Z. Zhang, Dept. Fisheries Oceans, Canada, pers. comm., 1999). Viewing, imaging, and measurement protocols for adults will mimic those for juveniles (see above) to allow for direct qualitative and quantitative comparison of otolith microstructure patterns between juvenile reference collections and "successful" adults.

Hypothesis testing: Information developed on the survival to adulthood of salmon that reared in the Delta as fry versus those that reared in their natal stream will be used in an attempt to reject the paired null hypotheses. We anticipate that neither hypothesis will be cleanly rejected (and certainly not both!), and that the building of alternative hypotheses will pursue addressing the various study objectives stated in section C. 1. a. of this proposal. The latter will ultimately involve an analytical synthesis whereby information on life-history success developed under this

proposal will be related to associated information on migration time, size, and life stage (fry, parr, smolt) of the salmon, and associated indices of macro-conditions (e.g. flow, temperature, salinity) in spawning tributaries versus the Delta.

c. Monitoring and Assessment Plans – Not applicable to the proposed research project.

d. Data Handling and Storage – Data on fish and otolith measurements will be entered, stored, and managed in a database (e.g. dBASE). Data manipulations for analysis will occur in spreadsheet and statistical software packages such as EXCEL, STATGRAPHICS, and SYSTAT.

e. Expected Products/Outcomes – The following is a list of documents and other obligations that will be prepared under this proposal and eventual contract:

- Quality Assurance Program Plan (year 1)
- Quarterly Reports (years 1–3)
- Annual Project Progress Reports (years 1 and 2)
- Final Project Report (year 3)
- Project Presentations (e.g., CALFED Science Conference, American Fisheries Society meetings, upon request)

f. Work Schedule – The work schedule for the proposed research is shown in Table 1. If only a portion of the project were to be funded, it would have to be in annual increments of all tasks together.

Table 1. Work schedule.

Task	Start	Completion
Prepare Quality Assurance Program Plan	September 2001	September 2001
Collect otoliths in field	September 2001 on-going thru	August 2004
Archive, prepare, and analyze otoliths in laboratory	September 2001 on-going thru	August 2004
Enter, manage & analyze data in office	September 2001 on-going thru	August 2004
Prepare quarterly reports	December 2001, each 1/4 thru	September 2004
Prepare annual progress reports		August 2002, 2003
Deliver final report		March 2005
Project management	September 2001 on-going thru	March 2005

g. Feasibility – The CDFG has conducted a pilot study under partial funding from the Interagency Ecological Program (IEP) to determine the basic utility of otolith and scale analysis for addressing Central Valley salmon and steelhead life-history questions. The pilot study has gone through three cycles of an IEP proposal review process administered by the Delta Salmon Project Work Team. The PWT identified otolith microstructure analysis as an appropriate tool to aid in the development of information about how salmon use the Delta. The background for using otolith microstructure analysis is presented in section C.1.b. (Conceptual Model), and methods are fully described in section C.2.b. (Approach), of this proposal.

The IEP pilot study has established Central Valley system-wide collection coordination for both juvenile and adult salmon and steelhead scales and otoliths, development of sample archiving and database protocols, development of sample preparation and analysis protocols including use of imaging analysis systems, and data analysis protocols (R. G. Titus and W. M. Snider, CDFG, progress report in prep.). The project proposed here will build upon the results of the IEP funded pilot study, with emphasis on (i) research implementation at a full-scale level; (ii) more directed sampling and analysis of in-Delta salmon; and (iii) reducing turnover time from sample collection to data analysis and reporting.

No permitting will be required pursuant to the National Environmental Policy Act or the California Environmental Quality Act. Each monitoring activity from which salmon will be collected has its own permits for sampling pursuant to Title 14 of the California Code of Regulations for scientific collecting (administered by the CDFG), the Federal Endangered Species Act, and the California Endangered Species Act. Each monitoring activity is responsible for its own permits, although some permits may need to be amended to allow collection of salmon for otoliths. These needs will have to be assessed on a case-by-case basis, and as new restrictions on research are enacted pursuant to the above policies.

D. APPLICABILITY to ERP GOALS and IMPLEMENTATION PLAN and CVPIA PRIORITIES

1. ERP GOALS AND CVPIA PRIORITIES

This proposal addresses ERP goal 1, recovery of native at-risk species dependent on the Delta (PSP, p. 17). Focus is on all runs of chinook salmon with emphasis on juvenile life history and the function of the Delta as habitat for juvenile salmon. A better understanding of the role of the Delta in survival of salmon to adulthood will provide necessary information for the identification and design of restoration actions in the Delta (and elsewhere in the salmon ecosystem) aimed at enhancing conditions for survival and thus recovery of the species.

2. RELATIONSHIP TO OTHER ECOSYSTEM RESTORATION PROJECTS

Essentially all restoration actions require an improved understanding of how the targeted restoration is integrated with salmon response to the ecosystem. For example, managing flow and temperature to influence growth and migration will affect timing and size of entry into the Delta. An improved understanding of expected success relative to time and size at entry will reduce the uncertainties surrounding the effectiveness of such restoration actions. Certainly, in-Delta restoration actions cannot be designed or implemented until an improved understanding of the Delta's importance is obtained.

3. REQUESTS FOR NEXT-PHASE FUNDING

This proposal is not seeking next-phase funding.

4. PREVIOUS RECIPIENTS OF CALFED OR CVPIA FUNDING

Since 1995, the Stream Evaluation Program has conducted investigations under funding from CVPIA project no. 1448-0001-95618, *Instream Flow Studies*. Annual reports summarize data collected on juvenile and adult salmon and steelhead life history and habitat use relative to stream flow, water temperature, etc., primarily in the upper Sacramento River. These data are being interfaced with physical habitat modeling activities being conducted by the U. S. Fish and Wildlife Service as a component of the instream flow study, and with the application of SALMOD by the U. S. Geological Survey in Fort Collins, CO, to model the dynamics of upper Sacramento River salmon populations as a function of major stream habitat attributes.

5. SYSTEM-WIDE ECOSYSTEM BENEFITS

Because of the comprehensive nature of this proposal, it will benefit all aspects of the science involved in recovery of salmon in the Central Valley. Likewise, information developed under this proposal will facilitate evaluation of restoration projects aimed at improving conditions for healthy, self-sustaining populations of Central Valley chinook salmon.

E. QUALIFICATIONS

Mr. Bill Snider will act as project manager. Mr Snider is a graduate of the University of California at Davis and has 28 years of experience with the CDFG, including 20 years experience with the Stream Evaluation Program of the Native Anadromous Fish and Watershed Branch. Currently, as supervisor of the Stream Evaluation Program, Mr. Snider oversees monitoring and research on anadromous salmonids in the Central Valley, including investigations on population dynamics, habitat relationships and life history strategies of chinook salmon and steelhead.

Dr. Robert Titus will serve as principal investigator. Dr. Titus is a graduate of the California State University, Sacramento and the Department of Limnology at Uppsala University, Sweden. He has worked on the CDFG's Stream Evaluation Program for 7 years and has 13 years of experience working on anadromous salmonids, including various chinook salmon and steelhead research and monitoring programs involving population dynamics, and the relationship of life history to habitat conditions. Dr. Titus has applied otolith microstructure analysis to address a variety of biological and ecological questions with anadromous salmonids (Mosegaard and Titus 1987, Titus 1991, Titus and Mosegaard 1991, CDFG 2000).

F. COST

1. BUDGET

A detailed budget is provided in Table 2. In general, the budget identified in Table 2 is to provide funds for 42 months of Fishery/Marine Biologist time (\$2,979 plus 20.48% benefits per month) and 36 months of fish and wildlife scientific aid time (\$1,826 plus 7.65% benefits per month). Funds are also sought to cover general operating expenses, including operation and maintenance of vehicles, supplies, minor equipment and travel per diem. Administrative overhead rate is estimated at 20%.

Table 2. Budget allotment for proposal to investigate the use of the Delta for rearing by Central Valley chinook salmon.

Year	Task	Direct Labor Hours	Salary	Benefits	Travel	Supplies & Expendables	Overhead (20%)	Total Cost
Year 1	Collect otoliths	3265	\$42,260	\$5,145	\$5,000	\$10,000	\$12,481	\$74,886
	Archive, prepare and analyze	3265	\$42,260	\$5,145	\$0	\$8,000	\$11,081	\$66,486
	Manage data, prepare reports	1306	\$16,904	\$2,058	\$0	\$0	\$3,792	\$22,754
	Total for year 1		101424	\$12,348	\$5,000	\$18,000	\$27,354	\$164,126
Year 2	Collect otoliths	3265	\$42,260	\$5,145	\$5,000	\$10,000	\$12,481	\$74,886
	Archive, prepare and analyze	3265	42260	\$5,145	\$0	\$8,000	\$11,081	\$66,486
	Manage data, prepare reports	1306	\$16,904	\$2,058	\$0	\$0	\$3,792	\$22,754
	Total for year 2		101424	\$12,348	\$5,000	\$18,000	\$27,354	\$164,126
Year 3	Collect otoliths	3265	\$42,260	\$5,145	\$5,000	\$10,000	\$12,481	\$74,886
	Archive, prepare and analyze	3265	42260	\$5,145	\$0	\$8,000	\$11,081	\$66,486
	Manage data, prepare reports	1306	\$16,904	\$2,058	\$0	\$0	\$3,792	\$22,754
	Total for year 3		101424	\$12,348	\$5,000	\$18,000	\$27,354	\$164,126
Year 4	Prepare final report	1038	\$17,844	\$3,654	\$0	\$500	\$4,400	\$26,398
	Total for year 4		\$17,844	\$3,654	\$0	\$500	\$4,400	\$26,398
Total Project Costs			\$322,116	\$40,698	\$15,000	\$54,500	\$86,463	\$518,777

2. COST-SHARING

The Department of Fish and Game will provide supervision and technical oversight of the proposed research at no cost (approximately \$134,000 for the project duration). No funding is being requested for laboratory or office facilities and associated equipment (approximately \$16,000 total).

G. LOCAL INVOLVEMENT

Each monitoring and assessment activity is responsible for informing and involving local entities, as appropriate, to conduct their basic investigations. The proposed research will be conducted within the framework established by the primary monitoring or assessment activity, which in many cases is the Stream Evaluation Program or other CDFG programs.

H. COMPLIANCE WITH STANDARD TERMS AND CONDITIONS

The CDFG will comply with the state and federal standard terms as presented in Attachments D and E of the PSP.

I. LITERATURE CITED

- Bradford, M. J., and G. H. Geen. 1987. Size and growth of juvenile chinook salmon back-calculated from otolith growth increments. Pages 453–461 in R. C. Summerfelt and G. E. Hall, (eds.). *The Age and Growth of Fish*. Iowa State Univ. Press, Ames, Iowa.
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- Snider, B., and R. Titus. 1998. Evaluation of juvenile anadromous salmonid emigration in the Sacramento River near Knights Landing, November 1995-July 1996. Calif. Dept. Fish Game, Environmental Services Division, Stream Evaluation Program Report. 26 pp + 36 figs, app.
- Snider, B., and R. G. Titus. 2000. Lower American River emigration survey, October 1996-September 1997. Calif. Dept. Fish Game, Habitat Conservation Division, Stream Evaluation Program Technical Report No. 00-2. 25 pp. + 26 figs, app.
- United States Fish and Wildlife Service. 1997. Abundance and survival of juvenile chinook salmon in the Sacramento-San Joaquin Estuary. U. S. Fish Wildl. Serv., Sac-San Joaquin Estuary Fish. Res. Office. 1994 Annual Progress Report. 58 pp + app.
- Titus, R. G. 1991. Population regulation in migratory brown trout (*Salmo trutta*). *Acta Universitatis Upsaliensis, Comprehensive Summaries of Uppsala Dissertations from the Faculty of Science.* 328:1-24.
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- Workman, M. 1999. An assessment of the downstream migration of juvenile chinook salmon (*Oncorhynchus tshawytscha*) in the lower Mokelumne River, California. M.S. Thesis, Dept. Biol. Sci., Calif. State Univ., Sacramento. 47 pp.
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J. THRESHOLD REQUIREMENTS

Please see the following attachments:

1. Letters of Notifications
2. Environmental Compliance Checklist
3. Land Use Checklist
4. Contract Forms

Example of Letter of Notification

Department of Fish and Game
Habitat Conservation Division
Native Anadromous Fish and Watershed Branch
8175 Alpine Avenue, Suite F
Sacramento, California 95826

May 3, 2000

Sacramento County Board of Supervisors
700 H Street
Sacramento, California 95814

Dear Supervisors:

As required by the CALFED Bay-Delta Program, this letter is to notify the Board of Supervisors that the California Department of Fish and Game will submit a proposal to the CALFED program for funding of a research project to occur in Sacramento County. The research consists of evaluating the life history of Chinook salmon in the Central Valley and Delta. The goal of the research is to improve our understanding of salmon to further State and Federal restoration and recovery efforts.

If you have any questions, I can be reached at (916) 227-6336.

Sincerely,

William M. Snider
Stream Evaluation Program

List of Counties and Watershed Groups to address Letter of Notification:

Butte
Colusa
Contra Costa
Merced
Nevada
Placer
Sacramento
San Joaquin
Shasta
Stanislaus
Sutter
Tehama
Yolo
Yuba

South Yuba River Citizens League
216 Main Street
Nevada City, Ca 95959

Yuba County Water Agency
1402 D Street
Marysville, ca 95901

Western Shasta Resource Conservation District

Mr. Tom Parilo, Developmental Services Director
Butte County Planning Commission
7 County Center Dr.
Oroville, CA 95965
(530) 538-7601

Mr. Tom Last
Sutter County Planning Department
1160 Civic Center Blvd.
Yuba City, CA 95993
(530) 822-7400

Mrs. Suzanne Gibbs
Big Chico Creek Watershed Alliance
602 Sycamore St.
Chico, CA 95928
(530) 342-3429

Rebekah Baker McGuire
Central Sierra Watershed Coalition
PO Box 67
Angels Camp, California 95222

Mr. Charles Kutz
Butte Creek Watershed Conservancy
P.O. Box 1611
Chico, CA 95927

Scott Murphy
Izaak Walton League - Streaminders Chapter
PO Box 3051
Chico, California 95927

Little Chico Creek Watershed Conservancy
Les Gerton
795 Caprice Way
Chico, California 95973

Mud, Sycamore, Big Chico, Little Chico, Commanche Creek
Tom Varga
PO Box 3420
Chico, California 95927-3420

Sacramento River Preservation Trust
John Merz
PO Box 5366
Chico, California 95927

Streamminders of Chico
Richard Roth
1318 Bruce Street
Chico, California 95926

San Joaquin River Committee
Radley Reep
PO Box 14166
Fresno, California 93650

San Joaquin River Parkway and Conservation Trust
Dave Koehler
1550 E Shaw Avenue Ste 114
Fresno, California 93710

Mill Creek Conservancy
Kerry L. Burke
Rt.5, Box 2700
Mill Creek, California 96061

Feather River CRM
Jim Wilcox
P.O. Box 3880
Quincy, California 95971

Battle Creek Watershed Conservancy (BCWC)
Anne Read
1 Sutter Street, Suite D
Red Bluff, California 96080

Tehama Fly Fishers
Chuck DeJournette
PO Box 224
Red Bluff, California 96080

Deer Creek Watershed Conservancy
Contact: Chris LeiningerContact
Address: PO Box 322Vina, California 96092

Environmental Compliance Checklist

All applicants must fill out this Environmental Compliance Checklist. Applications must contain answers to the following questions to be responsive and to be considered for funding. Failure to answer these questions and include them with the application will result in the application being considered nonresponsive and not considered for funding.

1. Do any of the actions included in the proposal require compliance with either the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), or both?

YES X
NO

2. If you answered yes to # 1, identify the lead governmental agency for CEQA/NEPA compliance.

Lead Agency

3. If you answered no to # 1, explain why CEQA/ NEPA compliance is not required for the actions in the proposal.

No state permit is required for the California Department of Fish and Game (Department) to collect and process tissue samples taken from carcasses of adult chinook salmon. Although the California Endangered Species Act (CESA) generally prohibits the take or possession of live or dead animals that are listed by the State as threatened or endangered (in this case, spring-run chinook salmon within the Central Valley) without a permit, State regulations expressly authorize California Department employees and agents to take and possess these animals for scientific purposes (Title 14 California Code of Regulations, Section 783.1(c)).

The Department believes this project falls within the Class 6 categorical CEQA exemption and that no CEQA environmental document will need to be prepared. Class 6 exempt activities consist of "basic data collection, research, experimental management and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource. ...". This exemption is appropriate because the project will not result in mortality or injury to a living animal listed under CESA.

No Federal Endangered Species Act Section 10(a)1[A] Research Permit for scientific purposes is presently needed by the Department to collect the proposed chinook salmon tissue samples. The Department will not be performing tissue collections of federally-listed endangered Sacramento winter-run chinook salmon. Winter-run tissue samples will be obtained from the U.S. Fish and Wildlife Service who possess a Section 10(a)1[A] Research Permit from NMFS to perform collections and sampling of Sacramento winter-run chinook salmon as part of the Winter-run Chinook Salmon Broodstock Program. No Federal Endangered Species Act Section 10(a)1[A] Research Permit for scientific purposes is presently needed by the Department to collect Central Valley spring- or fall-/late fall-run chinook salmon tissues from carcasses since NMFS has not yet promulgated a 4(d) Rule prohibiting take of Central Valley chinook salmon.

If the Department receives federal funding through CALFED, the Department believes this project qualifies for a categorical exclusion under NEPA because it is environmentally benign in the short term and should over time produce data that can be used to benefit fish species. The project qualifies as "...research, inventory, and information collection activities directly related to the conservation of fish and wildlife resources which involve negligible animal mortality or habitat destruction..." (Department of Interior Manual, Part 516, Chapter 6, Section 1.4 B (1)).

4. If CEQA/NEPA compliance is required, describe how the project will comply with either or both of these laws. Describe where the project is in the compliance process and the expected date of completion.

If, during the execution of the proposed three-year study, a 4(d) Rule is promulgated for Central Valley spring-or fall-/late fall-run chinook salmon and permits for scientific research are necessitated, the Department will request NMFS amend the Department's existing Section 10(a)1[A] Research Permit which presently authorizes specific levels of take for Sacramento winter-run chinook salmon. In such a case, NMFS would be the NEPA Lead Agency for authorizing take for scientific purposes.

5. Will the applicant require access across public or private property that the applicant does not own to accomplish the activities in the proposal?

 X
YES

NO

In order to perform field collections, access will be across public lands for the following streams: American Cosumnes, Feather, Mokelumne, and Upper Sacramento rivers, Clear, Butte Big Chico, and Battle creeks. Permission for access across private land has been obtained for Mill and Deer creeks (letters attached). Access points for Cottonwood, Beegum, and Antelope creeks need to be determined and documentation of permission will be provided to CALFED within 30 days of notification of approval.

6. Please indicate what permits or other approvals may be required for the activities contained in your proposal. Check all boxes that apply.

LOCAL

Conditional use permit	<u> </u>
Variance	<u> </u>
Subdivision Map Act approval	<u> </u>
Grading permit	<u> </u>
General plan amendment	<u> </u>
Specific plan approval	<u> </u>
Rezone	<u> </u>
Williamson Act Contract	<u> </u>
cancellation	<u> </u>
Other <u> </u>	
(please specify)	
None required	<u> X </u>

STATE

CESA Compliance	<u> </u> (CDFG)
Streambed alteration permit	<u> </u> (CDFG)
CWA § 401 certification	<u> </u> (RWQCB)
Coastal development permit	<u> </u> (Coastal Commission/BCDC)
Reclamation Board approval	<u> </u>
Notification	<u> </u> (DPC, BCDC)
Other <u> </u>	
(please specify)	
None required	<u> X </u>

FEDERAL

ESA Consultation ☐ (USFWS)
Rivers & Harbors Act permit ☐ (ACOE)
CWA § 404 permit ☐ (ACOE)
Other _____

(please specify)

None required ☒

DPC = Delta Protection Commission

CWA = Clean Water Act

CESA = California Endangered Species Act

USFWS = U.S. Fish and Wildlife Service

ACOE = U.S. Army Corps of Engineers

ESA = Endangered Species Act

CDFG = California Department of Fish and Game

RWQCB = Regional Water Quality Control Board

BCDC = Bay Conservation and Development Comm.

Land Use Checklist

All applicants must fill out this Land Use Checklist for their proposal. Applications must contain answers to the following questions to be responsive and to be considered for funding. Failure to answer these questions and include them with the application will result in the application being considered nonresponsive and not considered for funding.

1. Do the actions in the proposal involve physical changes to the land (i.e. grading, planting vegetation, or breaching levees) or restrictions in land use (i.e. conservation easement or placement of land in a wildlife refuge)?

YES _____ NO X _____

2. If NO to # 1, explain what type of actions are involved in the proposal (i.e., research only, planning only). Research only to collect tissue samples from adult chinook salmon carcasses.

3. If YES to # 1, what is the proposed land use change or restriction under the proposal?

4. If YES to # 1, is the land currently under a Williamson Act contract?

YES _____ NO _____

5. If YES to # 1, answer the following:

Current land use _____
Current zoning _____
Current general plan designation _____

6. If YES to #1, is the land classified as Prime Farmland, Farmland of Statewide Importance or Unique Farmland on the Department of Conservation Important Farmland Maps?

YES _____ NO _____ DON'T KNOW _____

7. If YES to # 1, how many acres of land will be subject to physical change or land use restrictions under the proposal?

8. If YES to # 1, is the property currently being commercially farmed or grazed?

YES _____ NO _____

9. If YES to #8, what are: the number of employees/acre _____
the total number of employees _____

- YES X
NO

12. If YES to # 10, answer the following:

Manage the property	_____
Provide operations and maintenance services	_____
Conduct monitoring	_____

- YES _____ NO _____

YES X
NO

16. If YES to # 15, describe _____

FEDERAL ASSISTANCE		15 May 2000																						
1. TYPE OF SUBMISSION: Application <input type="checkbox"/> Construction <input checked="" type="checkbox"/> Non-Construction		3. DATE RECEIVED BY STATE State Application Identifier _____																						
Preapplication <input type="checkbox"/> Construction <input type="checkbox"/> Non-Construction		4. DATE RECEIVED BY FEDERAL AGENCY Federal Identifier _____																						
5. APPLICANT INFORMATION																								
Legal Name: CA Dept of Fish and Game		Organizational Unit: Habitat Conservation Division																						
Address (give city, county, State, and zip code): 1416 Ninth Street Sacramento (Sacramento), CA 95814		Name and telephone number of person to be contacted on matters involving this application (give area code) B. H. Snider 916-227-6336																						
6. EMPLOYER IDENTIFICATION NUMBER (EIN): 94-11697567		7. TYPE OF APPLICANT: (enter appropriate letter in box) <div style="display: flex; justify-content: space-between;"> <div> A. State B. County C. Municipal D. Township E. Interstate F. Intermunicipal G. Special District </div> <div> H. Independent School Dist. I. State Controlled Institution of Higher Learning J. Private University K. Indian Tribe L. Individual M. Profit Organization N. Other (Specify) _____ </div> </div> <div style="text-align: right; border: 1px solid black; width: 30px; float: right;">A</div>																						
8. TYPE OF APPLICATION: <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation <input type="checkbox"/> Revision If Revision, enter appropriate letter(s) in box(es) <input type="checkbox"/> <input type="checkbox"/> A. Increase Award B. Decrease Award C. Increase Duration D. Decrease Duration Other(specify): _____		9. NAME OF FEDERAL AGENCY: USDI																						
10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: <div style="text-align: center;"> <input checked="" type="checkbox"/><input checked="" type="checkbox"/> - <input checked="" type="checkbox"/><input checked="" type="checkbox"/><input checked="" type="checkbox"/><input checked="" type="checkbox"/> </div> TITLE: NA		11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT: Determine importance of Delta to Chinook salmon																						
12. AREAS AFFECTED BY PROJECT (Cities, Counties, States, etc.): California																								
13. PROPOSED PROJECT		14. CONGRESSIONAL DISTRICTS OF:																						
Start Date 8-1-01	Ending Date 4-1-05	a. Applicant CA Dept of Fish and Game																						
15. ESTIMATED FUNDING:		b. Project Salmon rearing in the Delta																						
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>a. Federal</td> <td>\$</td> <td>518,777.00</td> </tr> <tr> <td>b. Applicant</td> <td>\$</td> <td></td> </tr> <tr> <td>c. State</td> <td>\$</td> <td></td> </tr> <tr> <td>d. Local</td> <td>\$</td> <td></td> </tr> <tr> <td>e. Other</td> <td>\$</td> <td></td> </tr> <tr> <td>f. Program Income</td> <td>\$</td> <td></td> </tr> <tr> <td>g. TOTAL</td> <td>\$</td> <td>518,777.00</td> </tr> </table>		a. Federal	\$	518,777.00	b. Applicant	\$		c. State	\$		d. Local	\$		e. Other	\$		f. Program Income	\$		g. TOTAL	\$	518,777.00	16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS? a. YES. THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON: DATE _____ b. No. <input type="checkbox"/> PROGRAM IS NOT COVERED BY E. O. 12372 <input type="checkbox"/> OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW	
a. Federal	\$	518,777.00																						
b. Applicant	\$																							
c. State	\$																							
d. Local	\$																							
e. Other	\$																							
f. Program Income	\$																							
g. TOTAL	\$	518,777.00																						
		17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT? <input type="checkbox"/> Yes If "Yes," attach an explanation. <input type="checkbox"/> No																						
18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT, THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED.																								
a. Type Name of Authorized Representative William Snider		b. Title Env. Spec. 4 (Supvr)																						
d. Signature of Authorized Representative 		c. Telephone Number 916-227-6336																						
		e. Date Signed 5-12-00																						

**PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET.
SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.**

This is a standard form used by applicants as a required facesheet for preapplications and applications submitted for Federal assistance. It will be used by Federal agencies to obtain applicant certification that States which have established a review and comment procedure in response to Executive Order 12372 and have selected the program to be included in their process, have been given an opportunity to review the applicant's submission.

- | Item: | Entry: | Item: | Entry: |
|-------|---|-------|--|
| 1. | Self-explanatory. | 12. | List only the largest political entities affected (e.g., State, counties, cities). |
| 2. | Date application submitted to Federal agency (or State if applicable) and applicant's control number (if applicable). | 13. | Self-explanatory. |
| 3. | State use only (if applicable). | 14. | List the applicant's Congressional District and any District(s) affected by the program or project. |
| 4. | If this application is to continue or revise an existing award, enter present Federal identifier number. If for a new project, leave blank. | 15. | Amount requested or to be contributed during the first funding/budget period by each contributor. Value of in-kind contributions should be included on appropriate lines as applicable. If the action will result in a dollar change to an existing award, indicate <u>only</u> the amount of the change. For decreases, enclose the amounts in parentheses. If both basic and supplemental amounts are included, show breakdown on an attached sheet. For multiple program funding, use totals and show breakdown using same categories as item 15. |
| 5. | Legal name of applicant, name of primary organizational unit which will undertake the assistance activity, complete address of the applicant, and name and telephone number of the person to contact on matters related to this application. | 16. | Applicants should contact the State Single Point of Contact (SPOC) for Federal Executive Order 12372 to determine whether the application is subject to the State intergovernmental review process. |
| 6. | Enter Employer Identification Number (EIN) as assigned by the Internal Revenue Service. | 17. | This question applies to the applicant organization, not the person who signs as the authorized representative. Categories of debt include delinquent audit disallowances, loans and taxes. |
| 7. | Enter the appropriate letter in the space provided. | 18. | To be signed by the authorized representative of the applicant. A copy of the governing body's authorization for you to sign this application as official representative must be on file in the applicant's office. (Certain Federal agencies may require that this authorization be submitted as part of the application.) |
| 8. | Check appropriate box and enter appropriate letter(s) in the space(s) provided:

-- "New" means a new assistance award.

-- "Continuation" means an extension for an additional funding/budget period for a project with a projected completion date.

-- "Revision" means any change in the Federal Government's financial obligation or contingent liability from an existing obligation. | | |
| 9. | Name of Federal agency from which assistance is being requested with this application. | | |
| 10. | Use the Catalog of Federal Domestic Assistance number and title of the program under which assistance is requested. | | |
| 11. | Enter a brief descriptive title of the project. If more than one program is involved, you should append an explanation on a separate sheet. If appropriate (e.g., construction or real property projects), attach a map showing project location. For preapplications, use a separate sheet to provide a summary description of this project. | | |

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1.		\$	\$	\$	\$	\$
2.						
3.						
4.						
5. Totals		\$	\$	\$	\$	\$

SECTION B - BUDGET CATEGORIES

Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY					Total (5)
	(1)	(2)	(3)	(4)	(5)	
a. Personnel	\$ 322,116	\$	\$	\$	\$	\$ 322,116
b. Fringe Benefits	40,698					40,698
c. Travel	15,000					15,000
d. Equipment	0					0
e. Supplies	54,500					54,500
f. Contractual						
g. Construction						
h. Other						
i. Total Direct Charges (sum of 6a-6h)	432,314					432,314
j. Indirect Charges	86,463					86,463
k. TOTALS (sum of 6i and 6j)	\$ 518,777	\$	\$	\$	\$	\$ 518,777

7. Program Income	\$	\$	\$	\$	\$	\$
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Standard Form 424A (Rev. 7-97)
Prescribed by OMB Circular A-102

Previous Edition Usable

SECTION C - NON-FEDERAL RESOURCES					
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS	
8.	\$	\$	\$	\$	
9.					
10.					
11.					
12. TOTAL (sum of lines 8-11)	\$	\$	\$	\$	
SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$ 27,355	\$	\$	\$	\$ 27,355
14. Non-Federal					
15. TOTAL (sum of lines 13 and 14)	\$ 27,355	\$	\$	\$	\$ 27,355
SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT					
(a) Grant Program	FUTURE FUNDING PERIODS (Years)				(e) Fourth
	(b) First	(c) Second	(d) Third	(e) Fourth	
16.	\$ 164,126	\$ 164,126	\$ 163,170	\$	\$ 0
17.					
18.					
19.					
20. TOTAL (sum of lines 16-19)	\$	\$	\$	\$	\$
SECTION F - OTHER BUDGET INFORMATION					
21. Direct Charges:			22. Indirect Charges:		
23. Remarks:					

ASSURANCES - NON-CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

**PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET.
SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.**

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements.
10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).
12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (Identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).
14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL		TITLE	
<i>WM Snider</i>		<i>Env. Spec 4 (Supvr)</i>	
APPLICANT ORGANIZATION		DATE SUBMITTED	
<i>CA Dept of Fish & Game</i>		<i>5-15-00</i>	

Agreement No.: _____

Exhibit: _____

**STANDARD CLAUSES –
INTERAGENCY AGREEMENTS**

Audit Clause. For Agreements in excess of \$10,000, the parties shall be subject to the examination and audit of the State Auditor for a period of three years after final payment under the Agreement. (Government Code Section 8546.7).

Availability of Funds. Work to be performed under this Agreement is subject to availability of funds through the State's normal budget process.

Interagency Payment Clause. For services provided under this Agreement, charges will be computed in accordance with State Administrative Manual Sections 8752 and 8752.1.

Termination Clause. Either State agency may terminate this Agreement upon thirty (30) days' advance written notice. The State agency providing the services shall be reimbursed for all reasonable expenses incurred up to the date of termination.

Severability. If any provision of this Agreement is held invalid or unenforceable by any court of final jurisdiction, it is the intent of the parties that all other provisions of this Agreement be construed to remain fully valid, enforceable, and binding on the parties.

Y2K Language. The Contractor warrants and represents that the goods or services sold, leased, or licensed to the State of California, its agencies, or its political subdivisions, pursuant to this Agreement are "Year 2000 compliant" For purposes of this Agreement, a good or service is Year 2000 compliant if it will continue to fully function before, at, and after the Year 2000 without interruption and, if applicable, with full ability to accurately and unambiguously process, display, compare, calculate, manipulate, and otherwise utilize date information. This warranty and representation supersedes all warranty disclaimers and limitations and all limitations on liability provided by or through the Contractor.

STANDARD CLAUSES - CONTRACTS WITH THE UNITED STATES

Workers' Compensation Clause. Contractor affirms that it is aware of the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that Code, and Contractor affirms that it will comply with such provisions before commencing the performance of the work under this contract. This provision shall apply to the extent provided by federal laws, rules and regulations.

Claims Dispute Clause. Any claim that Contractor may have regarding the performance of this agreement including, but not limited to, claims for additional compensation or extension of time, shall be submitted to the Director, Department of Water Resources, within thirty days of its accrual. State and Contractor shall then attempt to negotiate a resolution of such claim and process an amendment to this agreement to implement the terms of any such resolution. However, Contractor does not waive any rights or duties it may have as may be provided by federal laws, rules and regulations.

Nondiscrimination Clause. During the performance of this contract, the recipient, contractor and its subcontractors shall not deny the contract's benefits to any person on the basis of religion, color, ethnic group identification, sex, age, physical or mental disability, nor shall they discriminate unlawfully against any employee or applicant for employment because of race, religion, color, national origin, ancestry, physical handicap, mental disability, medical condition, marital status, age (over 40), or sex. Contractor shall insure that the evaluation and treatment of employees and applicants for employment are free of such discrimination. Contractor shall comply with the provisions of the Fair Employment and Housing Act (Government Code Section 12900 et seq.), the regulations promulgated thereunder (California Administrative Code, Title 2, Sections 7285.0 et seq.), the provisions of Article 9.5, Chapter 1, Part 1, Division 3, Title 2 of the Government Code (Government Code Sections 11135 - 11139.5), and the regulations or standards adopted by the awarding State agency to implement such article. Contractor or recipient shall permit access by representatives of the Department of Fair Employment and Housing and the awarding State agency upon reasonable notice at any time during the normal business hours, but in no case less than 24 hours' notice, to such of its books, records, accounts, other sources of information and its facilities as said Department or Agency shall require to ascertain compliance with this clause. Recipient, Contractor and its subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement. The Contractor shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform work under the contract.

Availability of Funds. Work to be performed under this contract is subject to availability of funds through the State's normal budget process.

Audit Clause. For contracts in excess of \$10,000, unless otherwise provided by federal laws, rules or regulations, the contracting parties shall be subject to the examination and audit of the State Auditor for a period of three years after final payment under the contract. (Government Code Section 8546.7).

Payment Retention Clause. Ten percent of any progress payments that may be provided for under this contract shall be withheld per Public Contract Code Sections 10346 and 10379 pending satisfactory completion of all services under the contract.

Reimbursement Clause. If applicable, travel and per diem expenses to be reimbursed under this contract shall be at the same rates the State provides for unrepresented employees in accordance with the provisions of Title 2, Chapter 3, of the California Code of Regulations. Contractor's designated headquarters for the purpose of computing such expenses shall be: _____

Americans With Disabilities Act. By signing this contract, Contractor assures the State that it complies with the Americans With Disabilities Act (ADA) of 1990, (42 U.S.C. 12101 et seq.), which prohibits discrimination on the basis of disability, as well as all applicable regulations and guidelines issued pursuant to the ADA.

Conflict of Interest. Current State Employees: a) No State officer or employee shall engage in any employment, activity or enterprise from which the officer or employee receives compensation or has a financial interest and which is sponsored or funded by any State agency, unless the employment, activity or enterprise is required as a condition of regular State employment. b) No State officer or employee shall contract on his or her own behalf as an independent contractor with any State agency to provide goods or services.

Former State Employees: a) For the two-year period from the date he or she left State employment, no former State officer or employee may enter into a contract in which he or she engaged in any of the negotiations, transactions, planning, arrangements or any part of the decision-making process relevant to the contract while employed in any capacity by any State agency. b) For the twelve-month period from the date he or she left State employment, no former State officer or employee may enter into a contract with any State agency if he or she was employed by that State agency in a policy-making position in the same general subject area as the proposed contract within the twelve-month period prior to his or her leaving State service.

ATTACHMENT
CALIFORNIA DEPARTMENT OF FISH AND GAME
NATIVE ANADROMOUS FISH AND WATERSHED BRANCH
STREAM EVALUATION PROGRAM

Juvenile Salmon and Steelhead Collection Protocol for Otoliths

Yuba River screw trap: Department of Fish and Game

- Please collect a total of 150 juvenile fall- and spring-run-sized chinook salmon, and all emigrating yearling and older juvenile steelhead, during the 2001 emigration period.
- Stratify the salmon samples by collecting 50 live fish during the early, middle and late phases of the emigration period, based on your judgement of these phases.
- Further stratify the samples by collecting over a 7-10 day period within each phase (e.g. 10/day during M-F). Avoid, for example, collecting all 50 fish in one day. Also, collect over the range of sizes available during any given week.
- Do not "thump" fish on the head as this may damage the otolith. Use MS-222 or other appropriate chemical to euthanize the fish if necessary.
- Please collect the following data for each collection and enter on the data slips provided:

Date: _____ Location: _____
Species: _____ Race: _____
Method of Collection: e.g. rotary screw trap, trawl, seine, etc
Collection no. _____ No. fish collected _____
- These slips should be put inside collection jars or whirl packs along with fish.
- Fish 50 mm FL or less should be preserved in alcohol, while fish greater than 50 mm FL should be frozen in whirl packs.
- Collections of fish should be separated by date and species. For example, do not mix steelhead and chinook in a single whirl pack or collection jar. Also, do not mix dates together. Fish collected on 03/10/00 should not be put in the same collection vial or whirl pack as fish collected on 03/11/00.
- Everything necessary for collection will be provided, e.g. alcohol, collection jars, whirl packs, etc.
- Enter each collection into the **Juvenile Salmonid Collection Log for Otoliths**. Use a separate sheet for salmon and steelhead.
- Please direct questions to Rob Titus at (916) 227-6390. Thank you for your assistance.

U.S. Department of the Interior

Certifications Regarding Debarment, Suspension and
Other Responsibility Matters, Drug-Free Workplace
Requirements and Lobbying

Persons signing this form should refer to the regulations referenced below for complete instructions:

Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions - The prospective primary participant further agrees by submitting this proposal that it will include the clause titled, "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions. See below for language to be used; use this form for certification and sign; or use Department of the Interior Form 1954 (DI-1954). (See Appendix A of Subpart D of 43 CFR Part 12.)

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions - (See Appendix B of Subpart D of 43 CFR Part 12.)

Certification Regarding Drug-Free Workplace Requirements - Alternate I. (Grantees Other Than Individuals) and Alternate II. (Grantees Who are Individuals) - (See Appendix C of Subpart D of 43 CFR Part 12.)

Signature on this form provides for compliance with certification requirements under 43 CFR Parts 12 and 18. The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of the Interior determines to award the covered transaction, grant, cooperative agreement or loan.

PART A: Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions

CHECK __ IF THIS CERTIFICATION IS FOR A PRIMARY COVERED TRANSACTION AND IS APPLICABLE.

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
 - (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
 - (b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
 - (d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
- (2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

PART B: Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions

CHECK __ IF THIS CERTIFICATION IS FOR A LOWER TIER COVERED TRANSACTION AND IS APPLICABLE.

- (1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
- (2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

PART C: Certification Regarding Drug-Free Workplace Requirements

CHECK ☒ IF THIS CERTIFICATION IS FOR AN APPLICANT WHO IS NOT AN INDIVIDUAL.

Alternate I. (Grantees Other Than Individuals)

A. The grantee certifies that it will or continue to provide a drug-free workplace by:

- (a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;
- (b) Establishing an ongoing drug-free awareness program to inform employees about--
 - (1) The dangers of drug abuse in the workplace;
 - (2) The grantee's policy of maintaining a drug-free workplace;
 - (3) Any available drug counseling, rehabilitation, and employee assistance programs; and
 - (4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;
- (c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);
- (d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will --
 - (1) Abide by the terms of the statement; and
 - (2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;
- (e) Notifying the agency in writing, within ten calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title, to every grant officer on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification number(s) of each affected grant;
- (f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted --
 - (1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or
 - (2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;
- (g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), (c), (d), (e) and (f).

B. The grantee may insert in the space provided below the site(s) for the performance of work done in connection with the specific grant:

Place of Performance (Street address, city, county, state, zip code)

8175 Alpine Ave Ste F
SACRAMENTO CA 95826

Check ☐ if there are workplaces on file that are not identified here.

PART D: Certification Regarding Drug-Free Workplace Requirements

CHECK ☐ IF THIS CERTIFICATION IS FOR AN APPLICANT WHO IS AN INDIVIDUAL.

Alternate II. (Grantees Who Are Individuals)

- (a) The grantee certifies that, as a condition of the grant, he or she will not engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance in conducting any activity with the grant;
- (b) If convicted of a criminal drug offense resulting from a violation occurring during the conduct of any grant activity, he or she will report the conviction, in writing, within 10 calendar days of the conviction, to the grant officer or other designee, unless the Federal agency designates a central point for the receipt of such notices. When notice is made to such a central point, it shall include the identification number(s) of each affected grant.

PART E: Certification Regarding Lobbying
Certification for Contracts, Grants, Loans, and Cooperative Agreements

*CHECK ☒ IF CERTIFICATION IS FOR THE AWARD OF ANY OF THE FOLLOWING AND
THE AMOUNT EXCEEDS \$100,000: A FEDERAL GRANT OR COOPERATIVE AGREEMENT,
SUBCONTRACT, OR SUBGRANT UNDER THE GRANT OR COOPERATIVE AGREEMENT.*

*CHECK ☐ IF CERTIFICATION IS FOR THE AWARD OF A FEDERAL
LOAN EXCEEDING THE AMOUNT OF \$150,000, OR A SUBGRANT OR
SUBCONTRACT EXCEEDING \$100,000, UNDER THE LOAN.*

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

As the authorized certifying official, I hereby certify that the above specified certifications are true.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL

WM Snider

TYPED NAME AND TITLE

William M Snider

DATE

5-15-00

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Printed in England

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